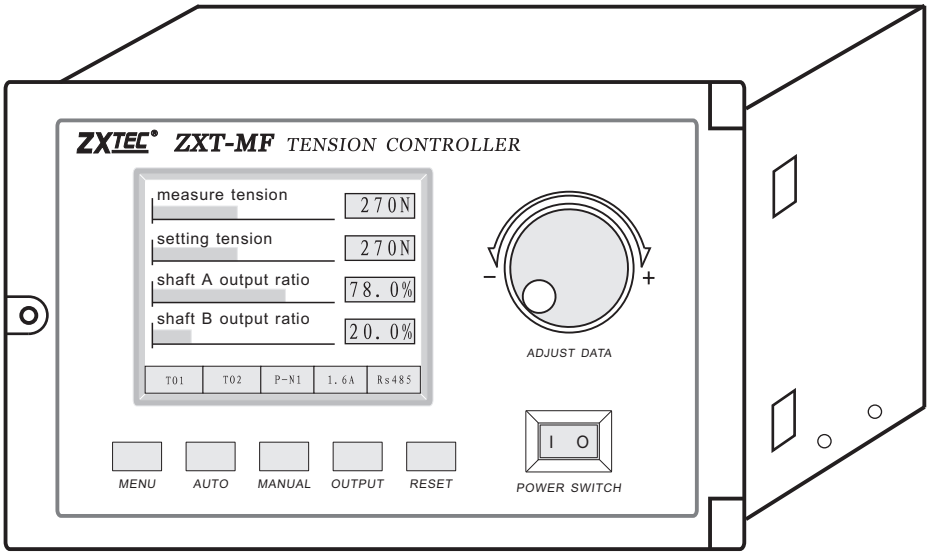
ZXTEC®

Software Version: V1. 0

ZXT-MF Tension controller

Apply to automatic constant tension mode

USER MANUAL



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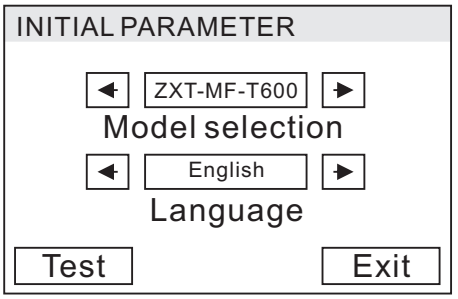
One. Model Selection

1. Summary: ZXT-MF is the multi-functional tension controller, users can set the controller to ZXT-MF-T automatic constant tension controller, ZXT-MF-M taper tension controller and ZXT-MF-S synchronous tension controller. The specification only for ZXT-MF-T as an illustration.

2. Setting method: Press "MENU" and "RESET" key and then turn on the power, the controller will enter the setting screen about type and language selection, user can according need to select correspondingly, then press "quit" button.

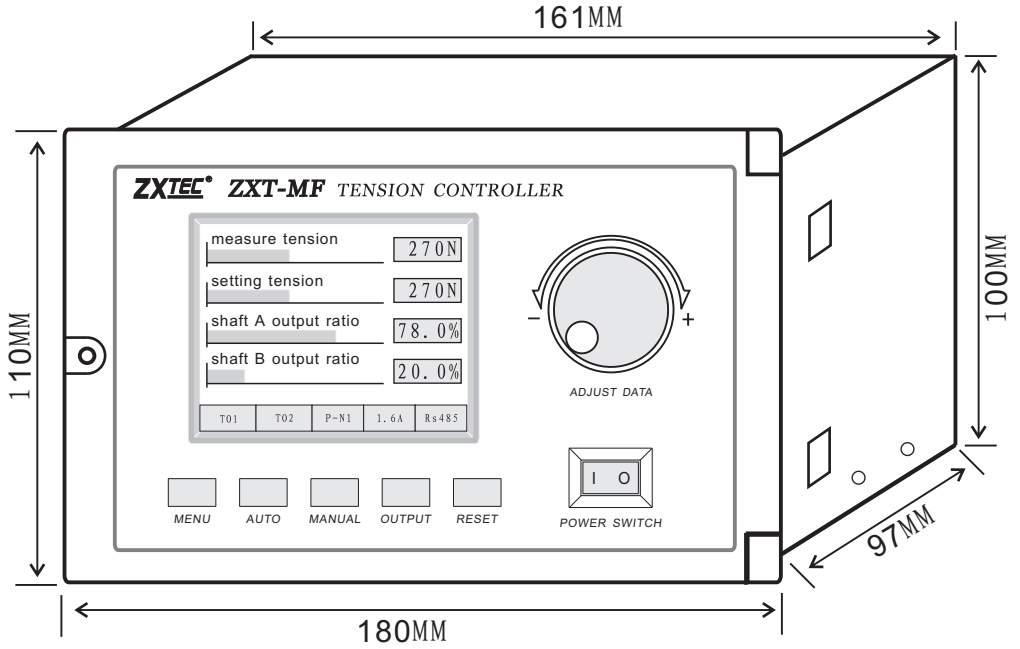


Model selection: ZXT-MF-T600

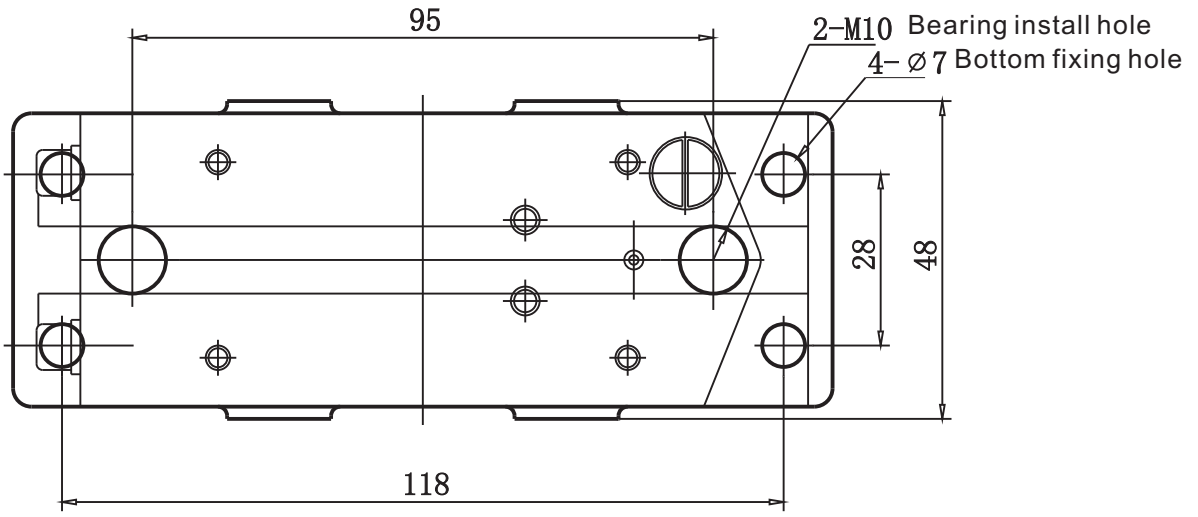
ZXT-MF-T: Automatic constant tension control

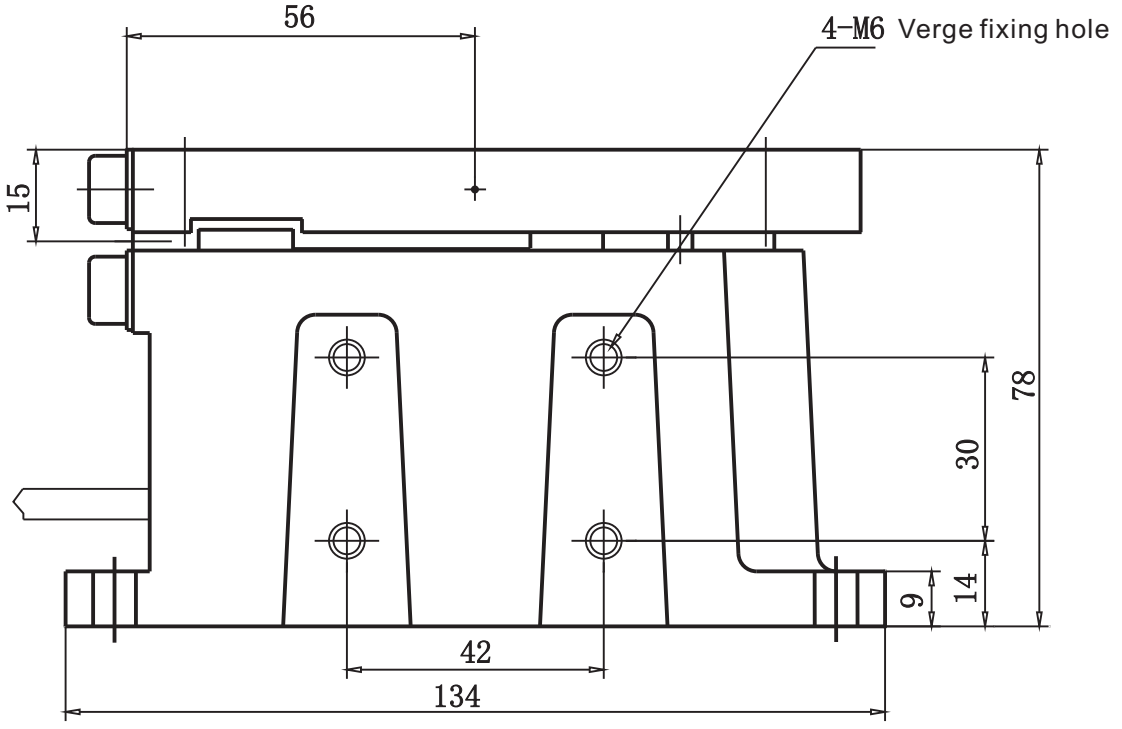
600: 600N tension detector

Two. Size of Controller and Tension Detector



Controller Dimension

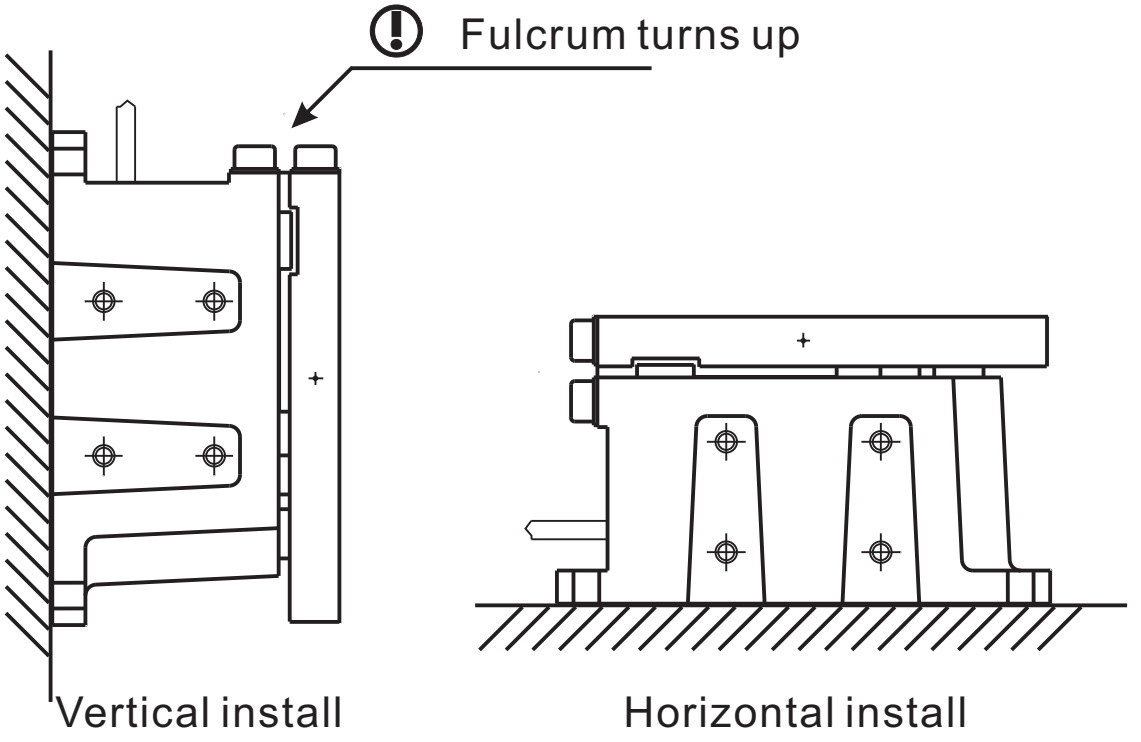




Tension detector Dimension

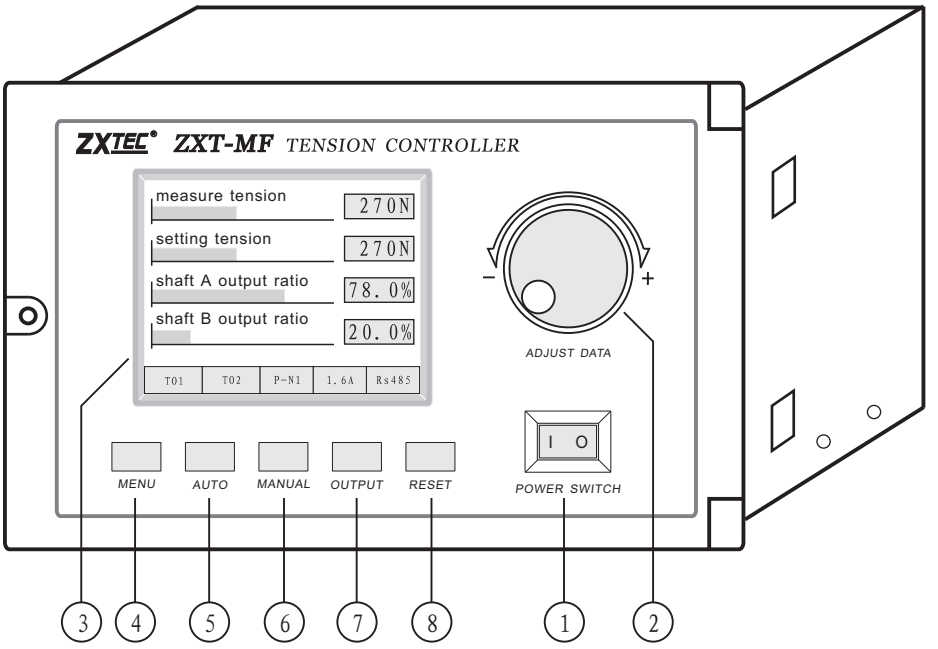
Three. Tension Detector Installation

Install tension detector can select bottom or verge fixing hole to fix. Install position is for the angle between the horizontal and vertical to install, if vertical install should pay attention to the fulcrum of the tension detector upward.



Note
Screws for installing tension detector and bearing block can not be too long, if too long it will lead to the reed of tension detector can not work normally and detect no tension.
When verge to fix, pay attention to the screw can not be too long, otherwise it will lead measuring mechanism of tension detector to damage
Tension detector can not be subjected to strong shock or vibration at any time, otherwise it will lead tension detector to damage.

Four. Controller Operation Panel



1, Power switch: General power switch of tension controller.

2, Value setting knob: Modify setting parameter at setting state, adjust setting tension at auto state, adjust output ratio at manual state.

3, LCD touch screen: Display and input tension controller data, set parameter data.

4, Menu button: Press it, tension controller will enter the setting parameter mode.

5, Automatic key: Press it, tension controller will select automatic adjust tension mode to work, While pressing this key indicator light, if flashing light indicates at paused state.

6, Manual Button: Press it, tension controller will select manual adjust tension mode to work, While pressing this key indicator light.

7, Output key: Press it can decide tension controller output tension or not. When indicator lights means tension at output state. When tension no output, tension controller will not adjust output ratio automatically in automatic mode.

8, Tension reset button: Press it, value of setting tension will be replaced by current measure tension when manual state. Press it, value of output ratio will change to axis ratio of setting parameters when automatic state.

Five. Control Principle of Auto Tension Controller

Working principle of tension controller is compare actual tension measured by two tension detector(mearsure tension) with working tension set artificially(setting tension). If two compared tension equal, tension controller will do not adjust output ratio. When measure tension is greater than setting tension, it means actual tension already too large, the controller will adjust automatically and reduce output ratio to reduce tension until two tension equal. Otherwise when measure tension is less than setting tension, controller will add output ratio to realize constant tension control.

Six. Parameter Setting and Function

100	101	102	103	200	201	202	203	204	205	206	207
tension detector monitor	input monitor	prepare output	exchange shaft output	restore factory setting	remove tare	calibration tension	full-scale tension	tension signal filtering	ratio gain	integration time	rewinding taper control

208	209	210	211	212	213	214	215	216	217	218
taper ratio	cantilever action time	truncated action time	pause control	MI4 selection	brake time	brake ratio	retention	communication address	baud rate	data format

Prompt: Menu number is greater than 103 require a password before being setting data password=123

100 Tension detector monitor : Monitoring output signal voltage of two tension detector and amplified data through the controller. Output voltage of tension detector is about 30MV at the factory. If it is equal to 0 or greater than 100MV, it is faulty.

101 Input Monitor : Monitoring input port status of tension controller .

102 Prepare output : Size of setting prepare output value will determine size of working shaft output ratio prepared to start.

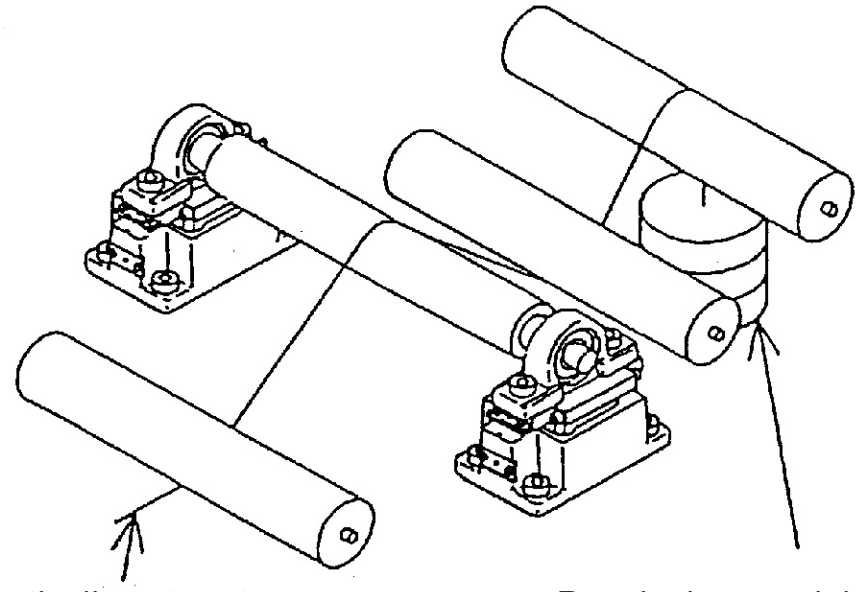
103 Exchange shaft output: Size of setting exchange shaft output value will determine size of output ratio when tension controller exchange shaft. When user adapt duplex rewind or unwind to exchange shaft, because tension will be sudden changed with material diameter sudden changed when exchange shaft, so set exchange shaft output to change output ratio to reduce tension sudden change when exchange shaft.

200 Restore factory settings: Internal parameters of tension controller back to the factory defaults.

201 Remove tare : Remove weight of guide roll and bearing installed on the tension detectors, so that tension detector only measure actual tension.

☺ Tip: Abnormal end is tension detector not installed properly or has been damaged. User can refer to the menu number 100 to judge tension detector output voltage.

202 Calibration tension : Adjust measure tension displayed on the tension controller equal to actual tension on the tension detector. Calibration method as below.



Place the line at center between two tension detector

Require hang weight greater than or equal to 50N

Tip: Perform calibration tension, you first need to remove tare before tension detector add weight.

203 Full-scale tension: Maximum setting tension of tension controller, set full-scale tension can make tension date display more intuitive and measure tension higher accuracy, we suggest full-scale tension should be set between 1.2 -1.5 times of actual use of maximum tension .

204 Tension signal filtering: Tension signal detected by tension detector take average value by the filtering time, its purpose is to reduce the mechanical vibration that will cause measure tension fluctuations.

205 Ratio gain: Tension controller output correction refers to deviation ratio between setting tension and measure tension. Reduce ratio gain can quickly make measure tension reach setting tension, but easy to shock of tension swing.

206 Integration time: Tension controller's response speed of output correction refers to deviation between setting tension and measure tension. Reduce integration time can improve responsiveness, but easy to shock of tension swing.

207 Rewinding taper control : You can choose to use or not to use taper tension control. Taper control is mainly used to rewind control , reduce running tension when roll diameter increase, it prevent material is wound tight and winging roll skew, etc.

208 Taper ratio: This parameter is only used under condition of rewinding taper control. Setting tension will auto descending when change of output ratio equal to taper ratio.

209 Cantilever action time : Output port"TO1" will output cantilever decline signal when "Mi4 selection" auto exchange shaft and input port"MI4 " has signal. Refer to cantilever action time delay and then output truncated action signal.

210 Truncated action time : Tension controller will make output port"TO2" to finish splicing and cut material action with truncated action time output signal after cantilever decline action finish. After finish truncated action, tension controller will auto exchange shaft and close cantilever signal output and pre-output.

211 Pause control : Controller adjustment will at pause state if input port"MI1" no signal in auto mode. indicator of auto key will flicker. When pause control select to delay type, only need"MI1"no jumping signal within 3 seconds and then enter pause state, Lever type is "Mi1" has signal input to cancel pause, no signal input to pause.

212 MI4 selection: Setting this parameter enables "MI4" port to select auto exchange shaft or auto brake function. When choose exchange shaft, controller will auto finish series of exchange shaft action when "Mi4"input signal, If choose auto brake, output ratio of controller will output brake tension refer to setting "brake time" and "brake ratio" when "Mi4" input signal. Auto brake 1 is input port adapt low level effective, auto brake 2 is input port adapt high level effective.

213 Brake time: When"MI4"select auto brake mode and has signal input, output ratio of tension controller refer this time to increase to "brake ratio" and then keep 5 seconds to restore original output ratio.

214 Brake ratio: Output ratio of tension controller brake. For example: when brake ratio is 200%, controller output ratio is 20% before brake start, after start brake output ratio is 20% increase to 40% refer to brake time to keep 5 seconds and restore to 20%.

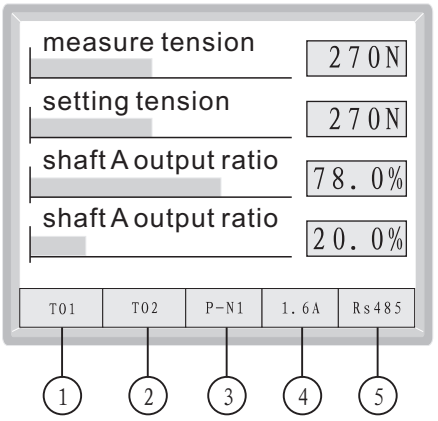
215 Retention: Reserved for future use.

216 Communication address: Tension controller in 485 communication network address. If address is set to 0, tension controller will not return data, often used as multi-tension controller to synchronous control.

217 Baud rate: Communication transmission speed (Unit: bits / sec).

218 Data Format: 8N1 no parity is MODBUS RTU mode transfer byte is 8 bits, 1 stop bit, no parity.

Seven. LCD Touch Screen Prompt Bar



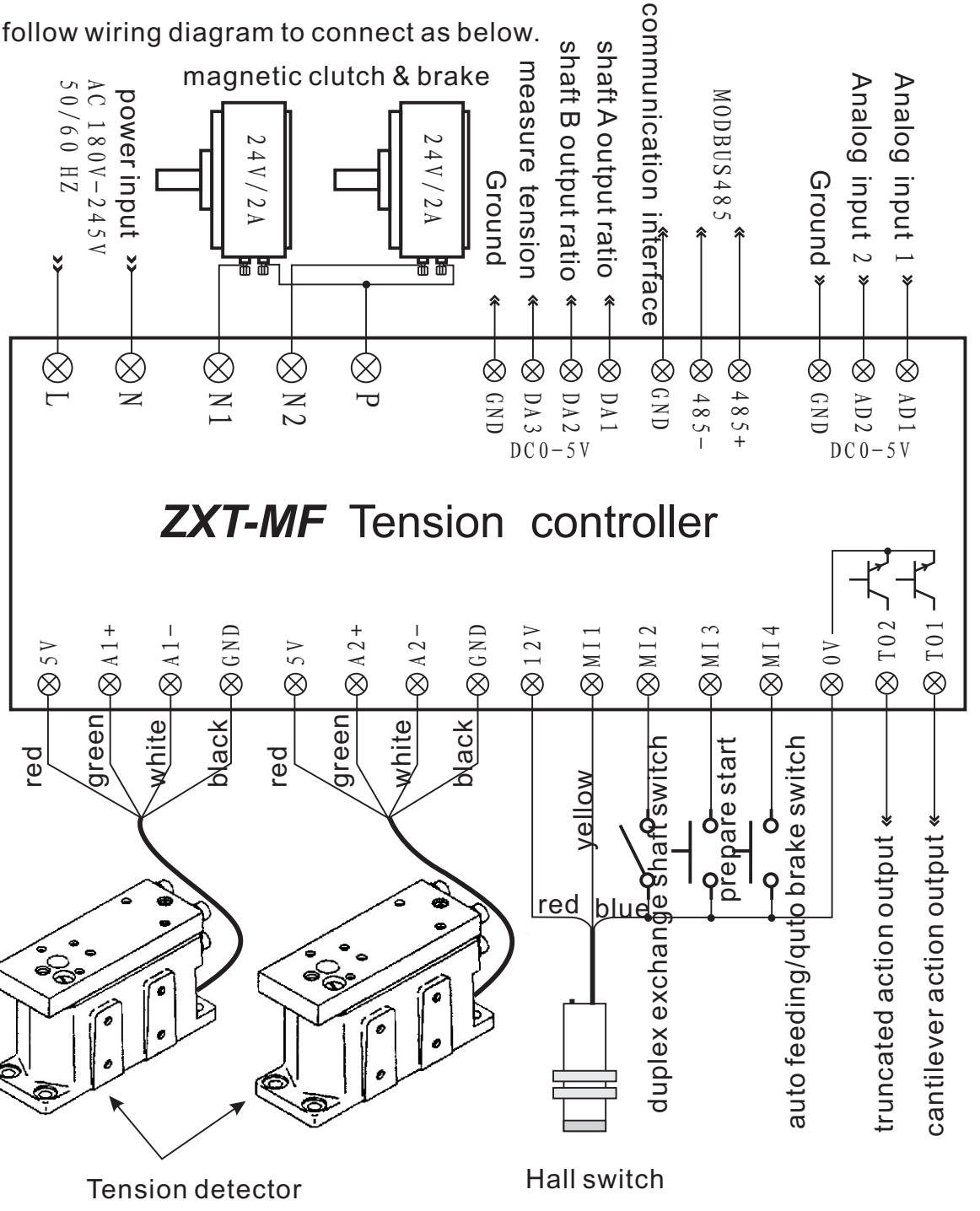
1. T O 1: Display green means cantilever signal output.
2. T O 2: Display green means truncated signal output.
3. P-N 1: Magnetic clutch output port.
4. Current indication: Display P-N port output to current of magnetic clutch.
5. R S485: Display green means normal communication, display red means communication data wrong, display white means no communication.

Eight. The Role of Suspend in Auto State

Tension controller maintain constant tension at auto working mode is rely to difference tension after compare measure tension with setting tension and then adjust output ratio. If detected material at stop state, tension controller can't detect actual measure tension and this time measure tension will less than actual running tension. If tension controller increase output ratio when measure tension less than setting tension, it will create running tension excessive next time. so auto tension controller's "Mi1" input port has no signal at auto mode, it will stop to auto adjust output, auto mode indicator flicker prompt controller at pause state. Pause control can set to delay or level type. Usually delay type use Hall switch to pick up moving guide roller to judge, but level type usually connect with run switch of machine.

Nine. Wiring

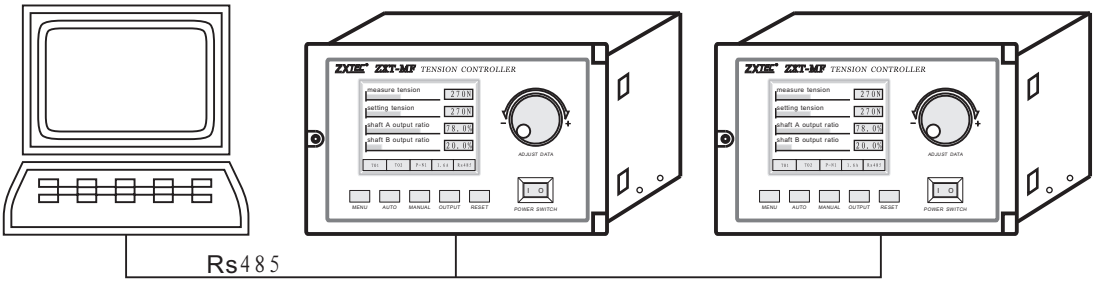
Users need to loose control panel screws when wiring. Open the control panel, follow wiring diagram to connect as below.



Tip: P-N1 and P-N2 can not both output current, when Mi2 no input, P-N1 output, when Mi2 input, P-N2 output. Size of output tension is the same as shaft A output ratio.

Ten. Modbus Communication Method

1. Connection:



Prompt: Maximize the use of three-wire communication lines, that is the data line+common ground, so you can make the communication data more stable.

2. Communication protocol: The controller uses the standard MODBUS RTU protocol, the user only need to send data corresponding to the address you can read and modify the operation of the address data.

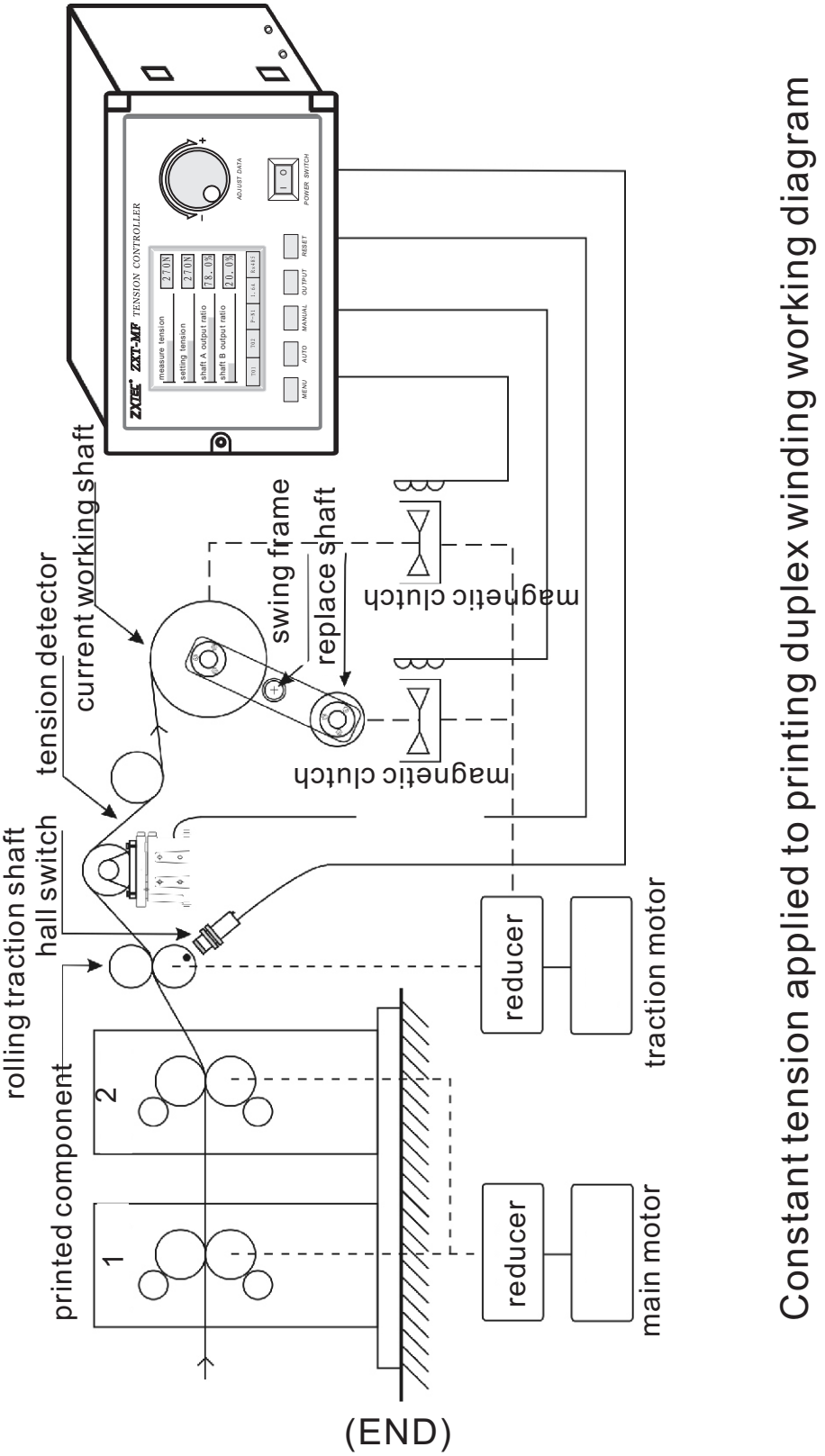
3. Controller data operating address:

control bit	0050H
measure tension (read)	0051H
setting tension	0052H
shaft A output ratio	0053H
shaft B output ratio	0054H

auto/manual	0 bit
tension output switch	1 bit
tension reset	2 bit

Users can see our website to download the test software to communicate with the controller through the computer test, if any technical problems, please call our technical department for advice.

Eleven. Application Diagram



Constant tension applied to printing duplex winding working diagram